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Assessment of digital Reference Services technologist for provision access and utilization of Information Resources and Services by the library Staff and Students of Ahmadu Bello University Distance Learning Centre 25/7/23

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Assessment of Digital Reference Service Technologies for Provision, Access
and Utilisation of Information Resources and Services by the Library Staff
and Students of Ahmadu Bello University Distance Learning Centre

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Abstract

The emergence of information and communication technologies dramatically impact people's living culture and work life in ways never imagined before. Digital reference technologies are information communication technologies use to render reference and information resources and services virtually. This study investigated the over eight years of using digital reference technologies to facilitate access and utilisation of information resources and services by students of the Ahmadu Bello University Distance Learning Centre (ABUDLC) using four research objectives to find out the types of digital reference technologies use to facilitate access and utilisation of information resources and services by ABUDLC students, to ascertain whether the digital reference technologies used were suitable for the provision of access and utilisation of information resources and services by students of ABUDLC, to know the extent of satisfaction with the information resources and service provided using digital reference technologies to Students of ABUDLC and to reveal challenges encountered by the library staff and students of ABUDLC in using digital reference technologies for the provision of, access and utilisation of information resources and services. Positivism research paradigm was used for the study. The population of the study was made of 7,000 postgraduate and undergraduate students and 4 library staff of the ABUDLC. Using a simple random sampling technique, a sample size of 374 was drawn from the population. Data was collected using structure questionnaire, and analysed using frequency count, percentage, mean and standard deviation. Some of the finds are: The common types of digital reference technologies use to facilitate access and utilisation of information resources and services by the ABUDLC students were co-browsing, text & video base chat such as telegram, Whatsapp and the likes, Elibrary software. Other types used were instant messaging, Email and Calibre. The study revealed that online pathfinders are highly suitable due to their perceived usefulness, followed by Instant Messaging due to the intended use for them and Email because of its perceived ease of use. ABUDLC Library Staff have challenges with using web form and Real-time reference; the least challenge was with using Telephone and Co-browsing. The students have challenge with using online pathfinders, Elibrary and Instant Messaging to access information resource and services. It was concluded and recommended that, there is still need to keep assessing what we practice and explore better ways to understand and serve our users better and there is need for the ABUDLC Library to increase awareness and use of less used digital reference technologies and to also fabricate its own digital reference solution such as robot aided reference service solution, design web form and explore Voice over IP for the benefits of its students among other recommendations.

Introduction

The emergence of information and communication technologies dramatically impact people's living culture and their work life in ways never imagined before. In the library and information work space for instance, myriad concepts, innovations and upgrade have emerged in the areas of "library automation", "digital information resources collaboration", "smart library", "cloud storage" and "digital reference service" setting agenda for new normal in operation, processing, formats of information resources, storage, dissemination and service delivery (Rathinasabapathy, Veeranjanyulu & Srinivasa, 2021). In the aspect of service delivery, digital reference service technologies being the focal point of this investigation, is referred to as the art and science of transmitting library information resources and services to clientele remotely without having to be physically present in the library with the aid of telecommunication technologies just as it is being practiced by banks offering financial services outside the conventional banking hall (Chandwani, 2018). The philosophy ensures that irrespective of the remote location of the user, the traditional determinants of access to information such as boundary, distance, cost and time have less or no material consequences in defining where and how library information resources and services are accessed and utilised so long, the user fulfil the preconditions (Ashikuzzaman, 2023). Online distance learning students enjoy digital reference services via technologies adopted or created for the purposes of supporting them by ensuring that they are not deprived of reliable information resources and services due to peculiarity of their mode of study. In this version of the digital reference technologies study, the researchers used positivism paradigm and Technology Acceptance Model (TAM) to reveal how the digital reference technologies are being conveniently used for access and utilisation of information resources and services by students of the Ahmadu Bello University Distance Learning Centre.

Ahmadu Bello University Distance Learning Centre

The mounting of distance learning in Ahmadu Bello University was necessitated by internal demand and external pressure initiated by the School of Postgraduate Studies as well agitations by some alumni as exemplified at the 50th anniversary by Mallam Adamu Fika in his lead paper to mark ABU's golden jubilee where he said *"ABU should consider developing an effective Distance Learning System that deploys modern communication facilities and online tutorial to impact functional knowledge to the millions who may not be able to enroll on its regular campus-based programmes"*.

Annually, an average of 13,000 applicants applied for various postgraduate programmes in the Ahmadu Bello University, although about 70% of these were qualified, less than 5, 000 are usually Admitted due to the limitation of on-campus facilities. The situation is even worse with the undergraduate programmes where 31,000 applicants to Ahmadu Bello University scored the minimum JAMB requirement of 180 points. Less than 10,000 of these can be admitted due to the same reason. It is thus obvious that ABU has not been able to satisfy the demands for those interested in obtaining ABU degrees. It has also been noted that Nigeria has been credited to be among the countries with the highest number of students studying abroad with about 71,000 studying in Ghana alone and paying not less than 155 billion Naira as tuition annually. ABU should cash on this opportunity to increase its relevance as well as revenue base. In an on campus model, there are obviously limits to how many additional students can be admitted (ABUDLC Students Hand Book, 2023).

Ahmadu Bello University Distance Learning Centre Library

The ABUDLC library was established to support teaching, learning, research and promotion of library and information literacy among the centre's staff and students. It maintains traditional prints of textbooks, periodicals, newspaper backset and digital collections accessed via

www.elibrary.abudlc.edu.ng. With over 5,000 uploaded ebooks, past questions and audio-visual resources, the library maintains unhindered access to the great Kashim Ibrahim Library collections particularly; its digital repository, Arabic resources, special collections, United Nations collections in addition to open and subscribed databases to mention but few. These resources cover the information need of staff and students of the seventeen programmes currently run by the centre. (ABUDLC, n.d)

Problem Statement

The primary goal of the library is to meet the information demand of its clientele through the robust collection of acquired, processed, organised and stored information resources for the benefits of the user. These information resources are accessed physically and remotely by students, lecturers, staff and the entire community the library serves. At the Ahmadu Bello University distance learning centre (ABUDLC), the students are remotely located. This implies that, to ensure that the students are adequately provided library information resources and services the application of digital reference technologies is obviously inevitable. Digital reference service is not confined to the traditional reference environment but extended to remote users with the aid of information and communication technology. Sometimes it is termed as e-reference service, Virtual reference service; its central objective is to provide pin-pointed, exhaustive, expeditious service to its information seekers whenever they have a query. For more than eight years now, the ABUDLC Library have being using digital reference technologies to facilitate access and utilisation of information resources and services by its students and there has not been an empirical investigation to show weather the students truly accept the service mode, or encounter challenges, or find the digital reference services suitable for their information access and utilisation, or they find the technologies used satisfactory and therefore, reliable. This

study is right on time, to investigate the speculations using positivism paradigm and Technology Acceptance Model (TAM) as a lens.

Research Objectives

The following objectives guided the investigation:

1. To find out the types of digital reference technologies use to facilitate access and utilisation of information resources and services by ABUDLC students
2. To ascertain whether the digital reference technologies used were suitable for the provision of access and utilisation of information resources and services by students of ABUDLC
3. To know the extent of satisfaction with the information resources and service provided using digital reference technologies to students of ABUDLC
4. To reveal challenges encountered by the library staff and students of ABUDLC in using digital reference technologies for the provision of, access and utilisation of information resources and services

Significance of the Study

This study provides assessment results of more than eight years of using digital reference technologies for facilitating access and utilisation of information resources and services at the ABUDLC Library. The result will aid in making important decisions by the management that will lead to addressing challenges and improve the provision of effective and efficient library and information services to staff and students of the centre. The outcome of this study will affirm or disaffirm the application of TAM in explaining suitability, acceptability and utilisation of digital reference technologies for the provision information resources and services students of ABUDLC. This study addresses the paucity in literature on the utilisation of digital technology in delivering information resources and services to students at ABUDLC. Scholars, researchers

and students of library and information science who are interesting in studying reference technologies and services will find this study useful.

Scope of the Study

This study covers the assessment of digital reference services technologies for the provision of, access and utilisation of information resources and services by the library staff and students of Distance Learning Centre in Ahmadu Bello University, Zaria. The respondents of the study are the library staff and the entire postgraduate and undergraduate students of the centre.

Limitation of the Study

This study is affected by the small number of library staff of the centre due to the small size of the library.

Literature Review

Concept of Reference Services

Reference service is the supreme and ultimate function of the library. It is in fact the hub of all library activities and sometimes referred to as 'reference and information services' or 'reader services' (ISLM,2016). Reference service equally encompasses the assistance given in the use of resources of the library". This submission is affirmed by James I. Wyer, who maintains that Reference service is that part of library administration which deals with the assistance given to the readers in their use of the resources of the library. For Margaret Hutchins, it includes the direct, personal aid within a library to persons in search of information for whatever purpose and also various library activities specially aimed at making information as easily available as possible. Samuel Rothstein aligns his position with James I. Wyer and Margaret Hutchins by looking at Reference service as the personal assistance given by the libraries to individual readers in pursuit of information. Their positions is succinctly articulated

by S.R. Ranganathan in his definition of reference service as the process of establishing contact between a reader and his documents in a personal way (Huling, 2019).

Furthermore, the term "reference service" is defined simply as personal assistance provided to library users seeking information. Individuals who hold a master's degree in the field of library and information sciences or information studies typically provide the service. Reference librarians are variously referred to as "mediators between the user and the information" and "navigators of the information super-highway." Reference service traditionally has been offered in person at a designated desk within the library building, over the telephone, and through correspondence.

More recently, libraries have expanded to offer reference service electronically via the World Wide Web, e-mail, and even two way video conferencing technologies. Another form of reference service is classroom and one-on-one instruction in the use of print and electronic resources. Regardless of the delivery method, the value of reference service remains the same: to provide quality information through personalized service to library users at the time of need. Reference service is characterized by human interaction.

Bunge (1999) as cited by Oluwabiya (2017) categorized reference services into four broad groups, namely: 1. Information services that involve either finding the required information on behalf of the users or assisting users in finding information. 2. Instruction in the use of Library resources and services (broadly defined as information literacy skills); and 3. User guidance, in which users are guided in selecting the most appropriate information sources and services

Philosophies of Reference Service

The goal of the reference librarian is to meet the individual need of the user to the fullest extent possible. How and to what extent this is done varies from library to library and depends on the type of library. Academic libraries focus on teaching users how to find information, special libraries primarily find information and package it for their users, and public libraries practice some of both approaches. Special libraries (e.g., for governments, corporations, museums, and newspapers) emphasized locating information over building and maintaining extensive collections. These were the first type of libraries to make use of online databases to identify appropriate resources. Limits of staffing, subject expertise, and resources prohibit most public and academic libraries from providing similar in-depth service. In his textbook, Wyer (1930) identified three concepts of reference work. The conservative philosophy instructs users in how to find the information on their own. The liberal philosophy holds that the reference librarian should locate the information for the user and provide it in the form needed. The moderate philosophy recognizes that maximum assistance will be offered based on a combination of library staffing, resources, time factors, and user need. The latter approach balances the instructional function with the full-service mode. Debates on these issues raged in the 1960s and 1970s, but they have abated as reference librarians have determined that a balanced approach takes into account the needs of the user at a particular time.

Digital Reference Services Technologies

According to Oluwabiya (2017) the terms digital and virtual are applied to the use of computer-based technology. Library professionals use both terms, and everyone agrees that digital/virtual reference is a new type of service based on the same question-and-answer type of

assistance provided in traditional in-person reference. Sloan (2012) opined digital reference service is the collaboration between library user and the librarian, in an ICT mediated media such as including email, Web forms, chat, video, Web customer call center software and Voice over Internet Protocol used to provide answer services that connect users with experts and subject expertise.

Similarly, Berube (2003) shares the view that digital reference service is a network of expertise intermediation and resources placed at the disposal of someone seeking answers in an online environment. Digital reference provide support for open distance and eLearning students who find online tools and resources unfamiliar, difficult to learn, or insufficient to answer their information needs. It provides valuable user feedback to collection builders so that they may better tailor their resources and maximize their investment in content creation.

Benefits of Digital Reference Services to Open Distance and eLearning (ODeL) Students

According to Sloan (2012), the benefits include:

- To provide individual assistance and instruction to Open Distance and eLearning (ODeL) Students .
- To provide and maintain an appropriate collection of reference resources, both print and electronic form for Open Distance and eLearning (ODeL) Students.
- To assist Open Distance and eLearning (ODeL) Students locate the best sources of information.
- To help in marketing reference resources to Open Distance and eLearning (ODeL) Students
- To serve as a public relations representative to Open Distance and eLearning (ODeL) Students.
- To help in Online Searching for Open Distance and eLearning (ODeL) Students.
- To help and assist in professional activities for development and growth

- To help in referral process, forward the enquiry or provide the Open Distance and eLearning (ODEL) Students with live links to authoritative websites
- To educate Open Distance and eLearning (ODEL) Students concerning research techniques

Provision of Digital Information Resources and Services

According to Berube (2003), the requirement for the provision of digital information resources and service are:

- 1) The presence of the User of the service on the digital reference site
- 2) The digital reference technology (interface), in the form of an e-mail, a web form, a video conference, chats, etc.
- 3) A reference librarian or information professional
- 4) Information resources, print or electronic.

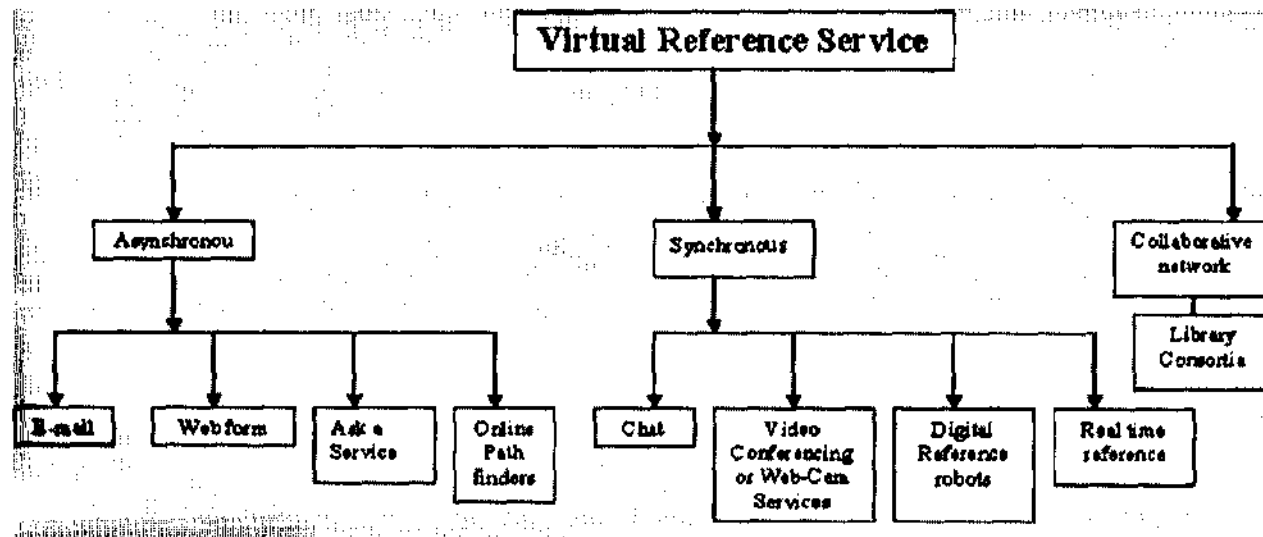
The role of the reference librarian in providing digital reference service as stated by McClennen and Memmott (2003) are:

- 1) Filterer: Filterer can be useful. They handle repeated and trivial questions.
- 2) Answerers: They concentrate on questions that require intellectual effort to answer.
- 3) Administrator: He ensures the smooth running of the service. He can add answers to frequently ask questions (FAQs). He creates user accounts and performs other technical tasks.
- 4) Coordinator: He is dedicated to defining and implementing policies and procedures. He takes initiatives for the improvement of the service.

Mode of Digital Reference Services

User behavior is changing and information provision has to follow new modes of delivery. Hence, there are new modes of delivery in digital reference services. According to Francoeur (2002), the mode for digital reference services can be divided into two broad categories. They are namely:

- 1) Asynchronous transactions – e-mail, web forms, Ask A services etc.
- 2) Synchronous transactions – chat reference using simple technologies, chat reference using web contact software, video conferencing or web camera services, and digital reference robots.



Source: Maharana and Panda (2005, p.3)

Technology Acceptance Model

Technology Acceptance Model (TAM) explains the acceptance and the use of information technologies to bring immediate and long-term benefits at organisational and individual levels, such as improved performance, financial and time efficiency and convenience (Foley Curley, 1984; Sharda, Barr & McDonnell, 1988). The potential of technology to deliver reference service has long motivated Information System management research to examine the willingness of individuals to accept innovative technology (Davis, 1989). Out of the four constructs of TAM, three were used as lens for the study to ascertain whether the digital reference technologies used were suitable for the provision of access and utilisation of information resources and services by students of ABUDLC (Marikyan and Papagiannidis, 2023). Three constructs were perceived usefulness, perceived ease of use and intention to use.

TAM represents the behaviour, as the outcome predicted by perceived ease of use, perceived usefulness and behavioural intention. Perceived ease of use and perceived usefulness capture the expectations of positive behavioural outcomes and the belief that behaviour will not be labour-consuming (Davis, 1989). According to a follow-up study, behavioural intention can be substituted by the attitude toward behaviour (Davis, 1993), which is an affective evaluation of the potential consequences of the behaviour (Ajzen, 2011). The higher the affective response, the higher is the likelihood that the behaviour will take place (Marikyan and Papagiannidis, 2023).

The effect of perceived usefulness on actual use can be direct, which underscores the importance of the variable in predicting behaviour. Although perceived ease of use does not affect use behaviour directly, it underpins the effect of perceived usefulness (Davis, 1993). The model implies that if an application is expected to be easy to use, the more likely it is that it will be considered useful for the user and the more likely it is that this will stimulate the acceptance of the technology (Davis, 1989; Davis, 1993).

The Selected Applied Constructs of Definition		
TAM		
1	Intention to Use	A person's subjective probability that he will perform some behavior.
2	Perceived Ease of Use	The degree to which a person believes that using a particular system would be free of effort.
3	Perceived Usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance

Research Methodology

Positivism research paradigm was used for the study. Positivism is a paradigm that relies on measurement and reason, that knowledge is revealed from a neutral and measurable (quantifiable) observation of activity, action or reaction. Positivism states that if something is not measurable in this way it cannot be known for certain. In positivism studies the role of the researcher is limited to data collection and interpretation in an objective way and depends on quantifiable observations that lead to statistical analyses (Collings, 2010). The population of the study was made of 7,000 postgraduate and undergraduate students and 4 library staff of the ABUDLC. Using a simple random sampling technique, a sample size of 374 was drawn from the population. Data was collected using structure questionnaire, and analysed using frequency count, percentage, means and standard deviation.

Data Presentation, Analysis and Discussion

The Data collected was analysed using tabular presentation and frequency count. Out of the 374 copies of questionnaire administered 344 were retrieved and found valid for further analysis and discussion.

Table 1: Types of digital Reference Technologies Use to Facilitate Access and Utilisation of Information Resources and Services by ABUDLC Students

s/n	Types of Digital Reference Technologies Use to Facilitate Access and Utilisation of Information Resources and Services by ABUDLC Students	Frequency	Percentage (%)
1	Elibrary software	100	29.1
2	Email	38	11.0
3	Telephone	20	5.8
4	Text & Video bases chat: Telegram, Whatsapp	116	33.7
5	Web form	-	-
6	Digital reference robot	-	-
7	Real-time reference	23	6.7
8	Online pathfinders	18	5.2
9	Voice over IP	-	-
10	Co-browsing	134	38.9
11	Instant Messaging	56	16.3
12	Calibre	37	10.8

Table 1 shows the common types of digital reference technologies use to facilitate access and utilisation of information resources and services by ABUDLC students are co-browsing 134(38.9%) followed by text & video bases chat such as telegram, Whatsapp and the likes 116(33.7%) and Elibrary software 100(29.1%). Other types are instant messaging 56(16.3%), Email 38(11.0%) and Calibre 37(10.8%).

Table 2: Suitability of the Digital Reference Technologies Used for the Provision of Access and Utilisation of Information Resources and Services by Students of the ABUDLC

s/n	Suitability of Digital Reference Technologies Use to Provide Access and Utilisation of Information Resources and Services to Students by the ABUDLC	HS	S	NS	T	M	SD
1	Elibrary software because of its perceived usefulness	43	107	5	155	77.5	1.3328
2	Email because of the perceived ease of use	54	202	33	289	144.5	2.4442
3	Telephone because of its perceived usefulness	98	8	78	184	92.0	1.4492
4	Text & Video chat technologies: Telegram, Whatsapp, Zoom for intended use	189	67	7	263	131.5	2.3168
5	Web form due to its perceived usefulness	5	0	213	218	109.0	2.4601
6	Digital reference robot due to its perceived ease of use	65	100	109	274	137.0	1.8656
7	Real-time reference for intended use	167	103	13	283	141.5	2.2705
8	Online pathfinders due to its perceived usefulness	100	163	54	317	158.5	2.2944
9	Voice over IP due to its ease of use	78	54	42	174	87.0	1.1979
10	Co-browsing due to its perceived usefulness	2	16	176	194	97.0	2.0407
11	Instant Messaging due to its intended use	234	56	7	297	148.5	2.7794
12	Calibre due to its perceived usefulness	165	100	19	284	142.0	2.2386

Key: HS-Highly Suitable, S-Suitable, NS-Not Suitable, T-Total, M-Mean, SD-Standard Deviation

Table 2 reveals the suitability of digital reference technologies use for the provision of access and utilisation of information resources and services by students of the ABUDLC. Online pathfinders are highly suitable due to its perceived usefulness with Mean score of 158.5(SD=2.2944) followed by Instant Messaging with Mean score of 148.5(SD=2.7794) due to its intended use and Email with Mean score of 144.5(SD=2.4442) because of the perceived ease

of use. Other notable ones are Real-time reference with Mean score of 141.5(SD=2.2705), Calibre with Mean score 142.0(SD=2.2386), digital reference robot with Mean score of 137.0(SD=1.8656) and Text & Video chat technologies: Telegram, Whatsapp, Zoom 131.5(SD=2.3168).

Table 3: Extent of Satisfaction with the Information Resources and Service Provided Using Digital Reference Technologies by Students of the ABUDLC

s/n	Extent of Satisfaction with the Information Resources and Service Provided Using Digital Reference Technologies by Students of the ABUDLC	HS	S	NS	T	M	SD
1	Remote Enquiry Services	234	59	3	296	148.0	2.4134
2	Catalogue on Web	214	76	5	295	147.5	2.2714
3	Dedicated Web Sites	109	22	43	174	87.0	1.1922
4	FAQs Page	-	-	-	-	-	-
5	Interactive Services	214	76	8	298	149.0	2.2723
6	Resources Remotely Available	198	16	7	221	110.5	1.9876
7	Links to Other OPACs	102	45	65	212	106.0	1.2905
8	Current Awareness Service	204	57	9	270	135.0	2.1200
9	Selective Dissemination of Information	45	76	100	221	110.5	1.3342
10	Document Delivery	234	59	3	296	148.0	2.4134
11	Inter-Library Loan	107	100	39	246	123.0	1.5155
12	Directional service	209	35	45	289	144.5	2.1663
13	Ready Reference	219	43	23	285	142.5	2.2436
14	Readers Advisory Service	25	178	100	303	151.5	2.0569
15	Provision of Access to ebook, ejournal & Databases	226	80	1	307	153.5	2.3974
16	Information Literacy	178	89	14	281	140.5	1.9950

Key: HS-Highly Satisfied, S-Satisfied, NS-Not Satisfied, T-Total, M-Mean, SD-Standard Deviation

Table 3 disclosed response on the extent of satisfaction derived with the Information Resources and Service Provided Using Digital Reference Technologies by Students of the ABUDLC. The students were Highly satisfied with Provision of Access to ebook, ejournal & Databases with Mean score of 153.5(SD=2.3974) followed by Readers Advisory Service with Mean score of 151.5(SD=2.0569) and Interactive Service with Mean score of 149.0(SD=2.2723). Other

information resources and services satisfaction was derived from using digital reference technologies were Remote Enquiry Services and Documentary Delivery with Mean scores of 148.0(SD=2.4134), Catalogue on web with Mean score of 147.5(SD=2.2714), Directional Service 144.5(SD=2.1663) and Ready Reference with Mean score of 142.5(SD=2.2436).

Table 4a: Challenges Encountered by the Library Staff in Using Digital Reference Technologies for the Provision of Access to Information Resources and Services

s/n	Challenges Encountered by the ABUDLC Library Staff in Using Digital Reference Technologies for the Provision of Access to Information Resources and Services	Frequency	Percentage (%)
1	Elibrary software	2	0.6
2	Email	-	-
3	Telephone	1	0.3
4	Text & Video bases chat: Telegram, Whatsapp	-	-
5	Web form	4	1.2
6	Digital reference robot	-	-
7	Real-time reference	3	0.9
8	Online pathfinders	2	0.6
9	Voice over IP	-	-
10	Co-browsing	1	0.3
11	Instant Messaging	-	-
12	Calibre	-	-

Note: The library staffs were four (4) at the time this data was collected

Table 4a x-rays the digital reference technologies ABUDLC Library Staff have challenge with using them to provide access to information resources and services to students. They have challenges with using web form 4(1.2%) followed by with Real-time reference 3(0.9%), the least challenge was with using Telephone and Co-browsing with 1(0.3%) each.

Table 4a: Challenges Encountered by Students of the ABUDLC in Using Digital Reference Technologies to Access and Utilise Information Resources and Services

s/n	Challenges Encountered by the ABUDLC Library Staff in Using Digital Reference Technologies for the Provision of Access to Information Resources and Services	Frequency	Percentage (%)
1	Elibrary software	116	33.7
2	Email	-	-
3	Telephone	20	5.8
4	Text & Video bases chat: Telegram, Whatsapp	16	4.7
5	Web form	-	-
6	Digital reference robot	-	-
7	Real-time reference	-	-
8	Online pathfinders	124	36.0
9	Voice over IP	107	30.2
10	Co-browsing	18	5.2
11	Instant Messaging	10	2.9
12	Calibre	37	10.8

Table 4b elucidates the digital reference technologies ABUDLC students have challenges with in using them to access information resources and services provide for them by the ABUDLC Library. From the responses, the students have challenge with using online pathfinders with 124(36.0%) followed by Elibrary with 116(33.7%) the least challenge with the technologies was Instant Messaging with 10(2.9%). Other notable challenges were with using Voice over IP with 107(30.2%) and Calibre 37(10.8%).

Discussion of Findings

1. The common types of digital reference technologies use to facilitate access and utilisation of information resources and services by the ABUDLC students were co-browsing, text & video base chat such as telegram, Whatsapp and the likes, Elibrary software. Other types used were instant messaging, Email and Calibre. It is common practice that most

academic libraries employ the combination of social media, telecommunication technologies such as telephone and other communication medium such as email to render digital reference, in fact, most libraries providing this type of service use them (Daniel & Raymond, 2023). Some of the reasons for adopting existing technologies to provide digital reference service are advanced by Davis (1993) as perceived ease of use and usefulness. This implies that technologies such as the ones indicated in this study are used due to their simplicity, purpose and least effort to operate them. However, what is not reported in this finding are web form, digital reference service and robot facilitated reference service. With the burgeoning students of the ABUDLC there will be need for them in the near future to manage response time and increased satisfaction.

2. The study revealed that online pathfinders are highly suitable due to their perceived usefulness, followed by Instant Messaging due to the intended use for them and Email because of its perceived ease of use. Other notable ones were Real-time reference, Calibre, digital reference robot and Text & Video chat technologies: Telegram, Whatsapp, Zoom. In a related study conducted by Angel & Dickson, (2022) in an academic library in Hong Kong it was found out that Whatsapp is the most preferred Virtual Reference Service due to its convenience, response immediacy, textual record, and minimal learning efforts. Phone, email, and Zoom are less preferred due to users' perceived embarrassment, formality, and time constraints. Obviously, the preference for a type of digital reference technology by a library or its user is consciously dictated by its ubiquity, perceived ease of use and intention. This proves that the ABUDLC students invariably share similar reasons for using certain technologies to access reference information resources and services (Davis, 1993, 1989).

3. The students were highly satisfied with Provision of Access to ebook, ejournal & Databases followed by Readers Advisory Service and Interactive Service. Other information resources and services satisfaction was derived from using digital reference technologies were Remote Enquiry Services and Documentary Delivery, Catalogue on web, Directional Service and Ready Reference. The increasing use of virtual reference to access relevant document, make enquiries and use navigation guides have equally been reported by scholars recently (Adetomiwa, 2020; Imam & Maria, 2023). The ABUDLC students require every bit of relevant information and enabling services at their disposal. This finding proves they have unhindered access to the library information resources and extended services from mother library (Kashim Ibrahim Library). However, FAQs are not being accessed by the students as at the time this finding was reported.
4. ABUDLC Library Staff had challenges with using web form followed by with Real-time reference; the least challenge was with using Telephone and Co-browsing. The students had challenge with using online pathfinders, Elibrary the least challenge and Instant Messaging to access information resource and services. Other notable challenges recorded were with using Voice over IP and Calibre. The challenges with some of the digital reference technologies are common. However, with continuous training and retraining of staff and students in the use of reference technologies, most of the challenges identified in this study will be overcome. Training is particularly required for Library staff when there is a redesign of traditional mode of reference delivery to upgraded one (Flierl & Henkaline, 2023).

Conclusion

The significance of reference services to users have been reported in numerous studies. Quite a number of them were systemic and user centred investigations which addressed the functions of the reference department and the expectations reference users have toward it. While notable studies affirmed that reference information services are integral to the academic success of students, they equally discussed service redesign that will change traditional mode of reference delivery and even suggested testable ways to accelerate them. However, there is still need to keep assessing what we practice and explore better ways to understand and serve our users better. On the other hand, institutions, universities and distance learning centres requiring digital reference services for their students and employees or seeking comprehensive remote reference service, must invest in it by providing the relevant information resources, access, technologies and manpower. This study is a step in the right direction as it has revealed the types of digital reference technologies, information resources and service provided, suitability of the digital reference technologies use and challenges faced by the ABUDLC Library staff and students.

Recommendation

1. There is need for the ABUDLC Library to increase awareness and use of less used digital reference technologies and to also fabricate its own digital reference solution such as robot aided reference service solution, design web form and explore Voice over IP for the benefits of its students.
2. There is need for the ABUDLC Library to take advantage of suitable technologies such as Chat and teleconference to provide reference service delivery options to suit numerous preferences of its students and to also consider using them, due to their affordability, availability and ease of use.
3. There is need for the ABUDLC Library in addition to maintaining the recorded satisfaction derived from the information resources and services it provided through digital reference technologies to students, to include FAQs that will to ease students independent information navigation, access and use.
4. Training and retraining of ABUDLC Library is important for all realms of library information technologies. However, preference should be given to digital reference

technologies due to the remote location of the centre's student. Furthermore, the training should covered use of elibrary solution, calibre and online pathfinders.

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